HE

64th Congress, 1st Session. | HOUSE OF REPRESENTATIVES. | Document No. 429.

PENTWATER HARBOR, MICH.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

WITH A LETTER FROM THE CHIEF OF ENGINEERS, REPORT ON PRELIMINARY EXAMINATION OF PENTWATER HARBOR, MICH., FROM THE MOUTH OF THE CHANNEL TO PENTWATER LAKE.

December 17, 1915.—Referred to the Committee on Rivers and Harbors and ordered to be printed, with illustration.

War Department,
Washington, December 16, 1915.

The Speaker of the House of Representatives.

Sir: I have the honor to transmit herewith a letter from the Chief of Engineers, United States Army, dated August 12, 1915, together with copy of a report from Maj. F. W. Altstaetter, Corps of Engineers, dated April 29, 1915, with map, on preliminary examination of Pentwater Harbor, Mich., made by him in compliance with the provisions of the river and harbor act approved February 27, 1911.

Very respectfully,

Lindley M. Garrison,
Secretary of War.

War Department,
Office of the Chief of Engineers,
Washington, August 12, 1915.

From: The Chief of Engineers, United States Army.
To: The Secretary of War.
Subject: Preliminary examination of Pentwater Harbor, Mich.

1. There is submitted herewith, for transmission to Congress, report dated April 29, 1915, with map, by Maj. F. W. Altstaetter,

Corps of Engineers, on preliminary examination of Pentwater Harbor, Mich., from the mouth of the channel to Pentwater Lake, called for by the river and harbor act approved February 27, 1911.

2. Pentwater Harbor is situated on the east shore of Lake Michigan about 11½ miles south of Ludington Harbor and 43 miles north of Muskegon Harbor. The existing project provides for a channel 16 feet deep and 150 feet wide, protected by suitable piers and revetments. This project has been completed with the exception of an extension of about 200 feet to the south pier. The total expenditures to March 4, 1915, amounted to $342,006.61, the expenditures for maintenance in recent years having averaged about $5,100 annually, or more than $1 per ton of freight carried. In view of the conditions existing at this harbor, the district officer in 1909 recommended its abandonment, and this recommendation has been included in recent annual reports of the Chief of Engineers. As a result of the present investigation the district officer now reaches a similar conclusion and recommends that the harbor be abandoned. In the opinion of the division engineer the harbor is not worthy of any improvement in amplification of the present project, but it is worthy of maintenance of the existing piers and of the present project channel for such width, less than the project width of 150 feet, as may be necessary for the harbor traffic.

3. This report has been referred, as required by law, to the Board of Engineers for Rivers and Harbors, and attention is invited to its report herewith, dated June 15, 1915, concurring in the views of the district officer.

4. After due consideration of the above-mentioned reports I concur in the views of the district officer and the Board of Engineers for Rivers and Harbors, and therefore report that the improvement by the United States of Pentwater Harbor, Mich., from the mouth of the channel to Pentwater Lake is deemed unworthy of further continuance or maintenance, and it is recommended that the project be abandoned and appropriations for this harbor discontinued.

DAN C. KINGMAN,
Chief of Engineers, United States Army.

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS.

[Third indorsement.]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
June 15, 1915.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

1. The following is in review of the district officer's report on preliminary examination of Pentwater Harbor, Mich., from the mouth of the channel to Pentwater Lake, called for by the act of February 27, 1911.

2. Pentwater Harbor is situated on the east shore of Lake Michigan, 11½ miles south of Ludington Harbor and 43 miles north of Muskegon Harbor. The existing project provides for a channel 16 feet deep and 150 feet wide protected by suitable piers and revetments. The project has been completed except for an extension of

200 feet on the south pier. The amount expended to March 4, 1915, was $342,006.61. The cost of maintenance in recent years has averaged about $5,100 annually, the principal work being dredging between and in the approach to the piers, where shoals form each year. Except for the outer end of the north piers the structures are in fair condition.

3. The population of Pentwater in 1910 was 1,129 and apparently it has not changed materially since. The population of Oceana County, in which Pentwater is situated, is reported as 18,379, but only a small part of this population is naturally tributary to Pentwater Harbor. Formerly this territory was covered with valuable timber and a business of considerable importance was done in this commodity, but the forests have practically disappeared and the land is being turned into fruit orchards, the products of which now form the principal articles of commerce.

4. An examination of the records shows that for the past eight years the commerce has averaged about 3,500 tons, except for 1914, when 9,900 tons of crushed stone was brought in for use on the county roads. There has been no material change for many years, and owing to the character of the commerce and the limited area from which it comes there seems to be no reason to anticipate any increase. In view of the high cost of maintenance, the improbability of a favorable change, and the small community to be served the district officer recommends that this harbor be abandoned. The division engineer is of opinion that Pentwater Harbor is not worthy of any improvement in amplification of the present project, but in view of the law of 1910, which directed that the balance of appropriations and allotments heretofore made be expended in maintenance in accordance with the present projects, it is worthy of maintenance of existing piers and of the present project channel for such width, less than the project width of 150 feet, as may be necessary for the harbor traffic.

5. It will be seen from data now available that the annual cost of maintenance is unjustifiably high when compared with the traffic. This, moreover, is on the basis of temporary repairs only. If the harbor is to be kept up, large expenditures for the reconstruction of the piers will have to be incurred or else the cost of annual maintenance will increase. The amount of commerce now handled is very small, and the limited area of the tributary country and the lack of any large manufacturing or industrial concerns renders any material increase improbable. The board therefore considers this harbor unworthy of further expenditures, either in amplification or maintenance of the existing project, and it accordingly recommends that the project be abandoned.

6. In compliance with law, the board reports that there are no questions of terminal facilities, water power, or other related subjects which could be coordinated with the suggested improvement in such manner as to render the work advisable in the interests of commerce and navigation.

For the board:

W. M. Black,
Colonel, Corps of Engineers,
Senior Member of the Board.

PRELIMINARY EXAMINATION OF PENTWATER HARBOR, MICH.

War Department,
United States Engineer Office,
Grand Rapids, Mich., April 29, 1915.

From: The District Engineer Officer.
To: The Chief of Engineers, United States Army
(Through the Division Engineer).
Subject: Preliminary examination of Pentwater Harbor.

1. In compliance with third indorsement, Office Chief of Engineers, dated November 24, 1913, the following report is submitted on preliminary examination of Pentwater Harbor, provided for by river and harbor act of February 27, 1911, as follows: Pentwater Harbor, Mich., from the mouth of the channel to Pentwater Lake.

2. *Geographical position.*—Pentwater Harbor, shown on map herewith, is situated in Oceana County on the east shore of Lake Michigan, midway between Little Sable Point on the south and Ludington Harbor on the north. Ludington Harbor entrance is 11½ miles north and the nearest ports on the south are White Lake and Muskegon Harbor, distant by steamer track about 32 miles and 43 miles, respectively. It is, roughly, 150 miles by water from Chicago and 90 miles from Milwaukee. The harbor is the natural outlet of Pentwater River, which stream before reaching Lake Michigan expands into Pentwater Lake. This lake is about 2 miles long and one-half mile wide, with depths ranging from 20 to 50 feet in the western portion, with decreasing depths in the eastern portion.

3. *Object.*—The object of the examination is not stated in the act. The citizens of Pentwater are very much concerned about the harbor, and it is believed that the survey was called for at the instigation of those who feared that the harbor might be abandoned at an early date as a result of the recommendation to that effect made in the Chief of Engineers' Annual Report for 1909.

4. *Population.*—The population (1910) of Pentwater Village was 1,129, and it has not changed greatly since. The country tributary to Pentwater Harbor is otherwise rural, except Hart, a village slightly larger than Pentwater. The population of the entire county (Oceana) was 18,379, mostly rural.

5. *Work done and present condition.*—In 1866, previous to any Government improvement, the outlet from Pentwater Lake to Lake Michigan was through a very irregular channel about 1,440 feet long, 75 feet wide, and 4 feet deep, protected on either side by slab piers and revetments built by local enterprise. The work of improving this channel was taken over by the United States under the project of 1867 and operations were begun the same year. This project was to increase the channel width and depth to 150 feet and 12 feet, respectively, and to protect the sides by piers and revetments. Subsequent amendments, in 1873, 1884, and 1892, to the original project relate merely to the length of the proposed piers and revetments. However, the act of March 2, 1907, authorized the Secretary of War "to dredge the channel at Pentwater to the depth of 16 feet," depth defined as at "mean low water." This authorization has been construed to change the project depth from 12 feet navigable depth to 16 feet navigable depth at low water.

The approved project is about 85 per cent completed, there being still required 200 feet extension to the south pier. The south revetment for a distance of about 250 feet from the inner end of the Government work to Pentwater Lake belongs to the Pere Marquette Railroad Co., and is in a very dilapidated condition.

The last work done toward the completion of the project was in 1889, when the south pier was extended by 50 linear feet of crib work. Since 1898 the north pier and revetment has been repaired throughout, with the exception of about 100 linear feet at the outer end, and the south pier and revetment repaired, except for a length of about 557 linear feet. Except for the outer end of the north pier, which is wrecked, the structures are in very fair condition. Depths over the inner portion of the channel are fairly stable, but shoals requiring annual dredging persist in forming between the shore line and the outer end of the piers and in Lake Michigan at the entrance to the piers. Since 1899 dredging to remove these shoals has been done each year, with the single exception of 1901. This dredging, however, provides only for increased depths for periods of greater or less duration, depending entirely upon the occurrence and effect of severe storms, which may occur at any time and fill the dredged area with sand from the shoals adjacent to the harbor entrance. This condition can be remedied only by the extension of both piers. The map herewith shows the soundings in April, 1914.

To March 4, 1915, there was expended on the present project the sum of $342,006.61, of which $179,899.10 was for works of improvement and $162,107.51 was for maintenance. The cost of maintenance in recent years has been about $5,100 per annum.

6. *Previous examinations and reports.*—Report upon a previous examination of this harbor was made in 1906 and is printed in House Document No. 181, Fifty-ninth Congress, second session. In that report the district officer recommended the adoption of a project providing a depth of 16 feet. The Board of Engineers for Rivers and Harbors recommends that the dredging be carried to a depth of 16 feet, but no other work done. In this the Chief of Engineers concurred.

May 27, 1909, the district officer made a special report to the Chief of Engineers on conditions at Pentwater Harbor and recommended the abandonment of this harbor. The Board of Engineers for Rivers and Harbors concurred in the report. The board was requested to reexamine the report, which they did, adhering to their original opinions. The reexamination is published in River and Harbor Committee Document No. 11, House of Representatives, Sixty-first Congress, second session. The report by the district officer and the report of the board are referred to in Annual Report of the Chief of Engineers, 1909, page 740, the Chief of Engineers concurring in the views of the board.

7. *Cost of repair and maintenance.*—Should this harbor be maintained indefinitely under the present project, the piers should be completed before many years and the old work thoroughly overhauled. This could be done at a cost estimated at $100,000, and maintained thereafter at $5,000 a year. The harbor could probably be maintained in a satisfactory condition for some years without any

serious repairs, allowing the piers and revetments to gradually fall into decay, making only minor emergency repairs. The annual cost of thus maintaining the harbor for a limited period is estimated at $4,000.

8. *Railroads.*—Pentwater is the end of a branch of the Pere Marquette Railroad, which, however, runs to the south shore while the village is on the north shore of the entrance and of Pentwater Lake. There is a public ferry, run by hand, maintained jointly by the railroad and the village. The nearest harbor by rail is White Lake Harbor, 27 miles distant, but this is a small place with poor boat service. The next harbor is Muskegon, distant 42 miles.

9. *Freight rates and water service.*—Prior to 1911 it was necessary for vessel freight to be shipped by way of Ludington on a small coastwise steamer, making two daily round trips between Pentwater and Ludington, and connecting at the latter port with the trans-lake steamers. Since that time this port has enjoyed the following service:

Pentwater to Milwaukee, via Ludington, and Pentwater to Chicago, via Northern Michigan Transportation Co. from Ludington.

PERE MARQUETTE LINE STEAMERS.

Year.	Regular service began—	Regular service ceased—	Round trips per week.
1911	May 7	Oct. 12	14
1912	May 8	Oct. 15	14
1913	May 13	Sept. 2	14
1914	May —	Sept. —	14

In addition several trips were made before and after the regular service schedule.

Pentwater to Milwaukee direct.

PERE MARQUETTE LINE STEAMERS.

Year.	Regular service began—	Regular service ceased—	Round trips per week.
1911 (no service)			
1912	Aug. 28	Sept. 10	7
1913	Sept. 2	Oct. 12	7
1914 (during fruit shipping season)			6

HILL STEAMBOAT LINE.

Year.	Regular service began—	Regular service ceased—	Round trips per week.
1911 (summer season)			
1912 (no service)			
1913	Aug. 18	Oct. 11	6
1914 (no service)			

The following table gives prevailing freight rates:

Rates for 1915.

[Cents per hundredweight.]

	Pentwater to Milwaukee by rail.	Pentwater or Ludington to Milwaukee by water.	Pentwater to Chicago by rail.	Pentwater to Chicago by water.
Class 1	34.7	30	39.4	38.8
Class 2	29.9	26	33.6	31.5
Class 3	23.1	21	26.3	26.3
Class 4	15.8	14	17.9	16.8
Class 5	12.6	10	14.2	12.6
Class 6	10.0	9	11.6	10.5
	126.1	11.0	143.0	136.5

10. *Commercial statistics.*—Commercial statistics of vessel traffic are difficult to obtain for Pentwater Harbor. From available records, the vessel traffic accredited to Pentwater Harbor is as follows:

TABLE I.—*Season of navigation.*

[Year 1914. Opened Mar. 14, closed Dec. 6.]

VESSEL CLASSIFICATION.

Class.	Total.	Net registered tonnage.	Passengers carried.
Arrived			2,219
Registered steam vessels	306	54,492	
Registered sail vessels	7	522	
Registered barges	5	4,575	
Departed			2,185
Registered steam vessels	306	54,492	
Registered sail vessels	7	522	
Registered barges	5	4,575	
Total	636	119,178	4,404

LOCAL FISH TUGS.[1]

	Number.	Tonnage.
Arrived:		
Registered steam vessels	236	1,654
Registered gasoline vessels	222	1,554
Departed:		
Registered steam vessels	236	1,654
Registered gasoline vessels	222	1,554
Total	916	6,416

[1] Small fish tugs fishing out of this harbor, having an average net registered tonnage of 7.1.

The Hill Steamboat line did not operate at this harbor this year.

The Pere Marquette line steamers operated a regular line between Pentwater and Ludington from May to the first part of September and a regular line between Pentwater and Milwaukee during the fruit-shipping season.

TABLE I.—*Season of navigation*—Continued.

FREIGHT TRAFFIC.

Articles.	Customary units.	Short tons.	Valuation.
RECEIPTS.			
Cabbage...tons	52	52	$360
Castings...do	13	13	1,346
Crushed stone...cubic yards	7,937	9,921	9,764
Dry goods...tons	16	16	6,795
Flour and feed...do	57	57	2,725
Fresh fish...do	113	113	19,591
Fruit...do	6	6	503
Furniture...do	15	15	4,500
General merchandise...do	160	160	24,000
Groceries...do	66	66	8,655
Hardware and paints...do	22	22	3,740
Lumber products...M feet	160	320	4,800
Meat products...tons	44	44	10,934
Notions...do	23	23	5,750
Seed peas...bushels	4,660	122	12,225
Total receipts	....	10,950	115,688
SHIPMENTS.			
Apples...barrels	5,323	426	11,977
Canned goods...cases	2,264	44	5,660
Fruit...tons	525	525	20,991
General merchandise...do	30	30	4,500
Machinery...do	28	28	16,800
Peaches...bushels	26,046	651	32,558
Potatoes...do	8,100	243	6,075
Total shipments	....	1,947	98,561
Grand total	....	12,897	214,248

TABLE II.

Calendar year.	1 Receipts.	2 Shipments.	3 Total.	4 Valuation.	5 Increase or decrease.	6 Shipments consisting of produce, fruits, and dairy products (included in columns 1 to 3).	7 Total passengers arriving and departing.[1]
	Short tons.	*Short tons.*	*Short tons.*		*Short tons.*		
1907	875	1,657	2,532	....	−886	1,657	....
1908	1,072	1,359	2,431	....	−101	900	3,500
1909	....	....	4,639	$294,657	+2,208	....	6,847
1910	2,832	1,445	4,277	92,626	−362	1,170	5,600
1911	1,299	3,120	4,419	257,375	+142	1,260	10,200
1912	693	926	1,619	159,713	−2,800	327	8,879
1913	1,980	1,547	3,527	264,213	+1,908	850	5,286
1914	10,950	1,947	12,897	214,248	[2] +9,370	1,889	4,404

---

[1] About 50 per cent are arrivals and 50 per cent are departures.

[2] About 9,900 tons of crushed stone for road improvement was used near Pentwater, and accounts for this increase.

TABLE III.

	1907		1908		1910		1911	
	Customary units.	Short tons.	Customary units.	Short tons.	Customary units.	Short tons.	Customary units.	Short tons.
RECEIPTS.								
Canned goods	150 tons	150	26 tons	26				
Coal, soft					2 tons	2		
Crushed stone			400 tons	400	2,210 cubic yards	2,431	60 cubic yards	812
Flour and feed					2 tons	2		
Lumber	400 tons	400	21 tons	21	20 M feet	40	35 M feet	70
Manufactured iron					37 tons	37		
Miscellaneous merchandise.	325 tons	325	625 tons	625	200 tons	200	401 tons	401
Salt					10 tons	10	16 tons	16
Seed peas					3,659 bushels	110		
Total receipts		875		1,072		2,832		1,299
SHIPMENTS.								
Canned goods	507 tons	507	200 tons	200	1,114 cases	24		
Express, fruit							600 tons	600
Fruits, meat, and fish			909 tons	909				
Fruit, fish, potatoes, and miscellaneous					550 tons	550	2,520 tons	2,520
Peaches	400 tons	400						
Potatoes	750 tons	750	250 tons	250	871 tons	871		
Total shipments		1,657		1,359		1,445		3,120
Grand total		2,532		2,431		4,277		4,419

	1912		1913		1914	
	Customary units.	Short tons.	Customary units.	Short tons.	Customary units.	Short tons.
RECEIPTS.						
Beer and liquors			43 tons	43		
Cabbage					52 tons	52
Canning supplies	10 tons	10	24 tons	24		
Castings					13 tons	13
Crushed stone			725 cubic yards	906	7,937 cubic yards	9,921
Dressed meats			8 tons	8		
Drugs and sundries			4 tons	4		
Dry goods	43 tons	43	54 tons	54	16 tons	16
Flour and feed					57 tons	57
Furniture					15 tons	15
Fresh fish			109 tons	109	113 tons	113
Fruit					6 tons	6
Groceries	125 tons	125	172 tons	172	66 tons	66
Hardware	25 tons	25				
Hardware and paints			31 tons	31	22 tons	22
Lumber			249 M feet	478		
Lumber products					160 M feet	320
Machinery	35 tons	35				
Machinery and castings			30 tons	30		
Meat products					44 tons	44
Miscellaneous merchandise	305 tons	305	44 tons	44	160 tons	160
Notions			2 tons	2	23 tons	23
Seed peas					4,660 bushels	122
Shingles	150 tons	150	75 tons	75		
Total receipts		693		1,980		10,950
SHIPMENTS.						
Apples					5,323 barrels	426
Canned goods	4,856 pounds 134 tons	2 134	300 cases	8	2,264 cases	44
Express, fruit	325 tons	325	175 tons 19,315 bushels 621 barrels	705	525 tons	525

TABLE III—Continued.

	1912		1913		1914	
	Customary units.	Short tons.	Customary units.	Short tons.	Customary units.	Short tons.
SHIPMENTS—contd.						
Machinery			23 tons	23	28 tons	28
Miscellaneous merchandise.	465 tons	465	674 tons	674	30 tons	30
Peaches					26,046 bushels	651
Potatoes			4,503 bushels	137	8,100 bushels	243
Total shipments		926		1,547		1,947
Grand total		1,619		3,527		12,897

11. *Conclusions and recommendation.*—The vicinity of Pentwater was formerly a lumber country, and the harbor works were built to accommodate this trade. The lumber is now exhausted, and the country is adjusting itself to the new conditions. The citizens of Pentwater maintain that there is a prosperous future ahead of it, with the development of the fruit farms in the vicinity, and with the growth of Pentwater as a summer resort. The quick, cool, night trip across Lake Michigan to Milwaukee, with low freight rate, is, undoubtedly, very favorable to the fruit interests, and fruit raising is profitable, but the region tributary to Pentwater is too small to expect a very large development in this line. At present there is a fair development as a summer resort, but the climate and all other conditions are favorable to a greater one. It is, nevertheless, very problematic whether there will ever be sufficient growth here to warrant the National Government in undertaking the entire work of maintaining this harbor. The average tonnage for the last eight years is 4,543 tons, and the average number of passengers for the last seven years (the limit of records) is 6,388 passengers. Using these figures with $5,100 as the annual maintenance charge, we find the cost per ton of freight moved is $1.12, if all expenditures are charged against the freight. If each passenger is counted the equivalent of a ton of freight, the charge becomes $0.466 against each ton and each passenger.

From the freight rates given in paragraph 9 it is seen that to Chicago the difference between water and rail rates per ton vary from 0 to 42 cents, and to Milwaukee from 20 to 97 cents per ton. The fruit and dairy traffic with Milwaukee is the traffic the citizens of Pentwater seem most exercised about, claiming that the abandonment of the harbor will mean a complete cessation of any such traffic with Milwaukee.

Harbors near by seem to give the service needed except for a small community. A trolley line to Ludington Harbor would solve the problem, and probably give much better satisfaction than the local harbor. Maintaining this harbor is largely a question of local development, which might induce local interests to offer to defray part of the harbor costs. It is a more or less undeveloped country, and there are no large wealthy interests which could be expected to contribute, and the outlook for local cooperation is not hopeful.

The money on hand ($8,000) will dredge this harbor so it will be in a serviceable condition for two or three years. This procedure is in harmony with what has been done here the last few years, and will be presumably continued until the money on hand is expended.

In view of the high cost of maintenance at this harbor per ton of freight or per passenger moved, the improbability of a change in conditions which would reduce these unit costs to a reasonable figure; in view of the small community served and the value of the improvement, largely as a means of local development, which value could as well be obtained by an electrical railroad, I am forced to the opinion that this harbor should be abandoned, and I so recommend.

12. *Terminal facilities, etc.*—The railroad company has a dock 70 feet long and about 50 feet from the railroad track, which offers water and rail transfer facilities. There is about 15 feet of water in front of this dock. The other docks are all on the north side of Pentwater Lake and have no railroad connections. Starting at the north end of the lake the Sears & Nichols dock is 170 feet long, the Finches dock 110 feet long, the Pere Marquette Line Steamers dock is 180 feet long, the Sands & Maxwell dock 190 feet long, and they have, respectively, 15 feet, 16 feet, 16 feet, and 19 feet of water in front of them. These docks are all privately owned and are not available to the public free of charge. The Sands & Maxwell dock is used by the Hill steamboat line, which pays 10 per cent of the freight charges for its use and the services of an agent. The village controls the foot of two streets, each 66 feet wide, which could be made available for wharfage purposes free to the public if the traffic warranted such use. It was ascertained that the above docks cost approximately as follows: Sears & Nichols dock and warehouse, $6,000; Finches dock, $1,000; Pere Marquette Line steamers dock and warehouse, $5,000; Sands & Maxwell dock and warehouse, $10,000. No dredging has ever been necessary for maintenance in front of these docks. The only docks used at the present time are the Pere Marquette Line steamers dock and the Sands & Maxwell dock.

13. *Water power, etc.*—There is no water power, flood protection, forestation, or other matter which may properly be connected with the improvement of this harbor.

F. W. Altstaetter,
Major, Corps of Engineers.

[First indorsement.]

Office Division Engineer, Lakes Division,
Buffalo, N. Y., May 14, 1915.

To the Chief of Engineers:

1. Forwarded.

2. The present condition of Pentwater Harbor may be summarized as follows: The present project has been completed, except extension lakeward of 200 feet of the south pier, not now necessary; and except maintenance of the piers from Lake Michigan to Pentwater Lake and the channel between them 150 feet wide and 16 feet deep at low water, which is 2 feet below mean lake level, 1860–1875.

3. Funds are available for required maintenance for probably three years, to 1918.

4. It can reasonably be expected that the freight and passenger traffic at this harbor will remain as at present, with possibly some increase.

5. The river and harbor act of June 25, 1910, provided as follows:

> White Lake and Pentwater Harbors, Mich.: The Secretary of War is hereby authorized and directed to expend the balances of appropriations and allotments heretofore made for these harbors in maintaining the improvements in accordance with the present projects.

6. In view of the foregoing, while Pentwater Harbor is, in my opinion, not worthy of any improvement in amplification of the present project, it is worthy of maintenance of the existing piers and of the present project channel for such width, less than the project width of 150 feet, as may be necessary for the harbor traffic.

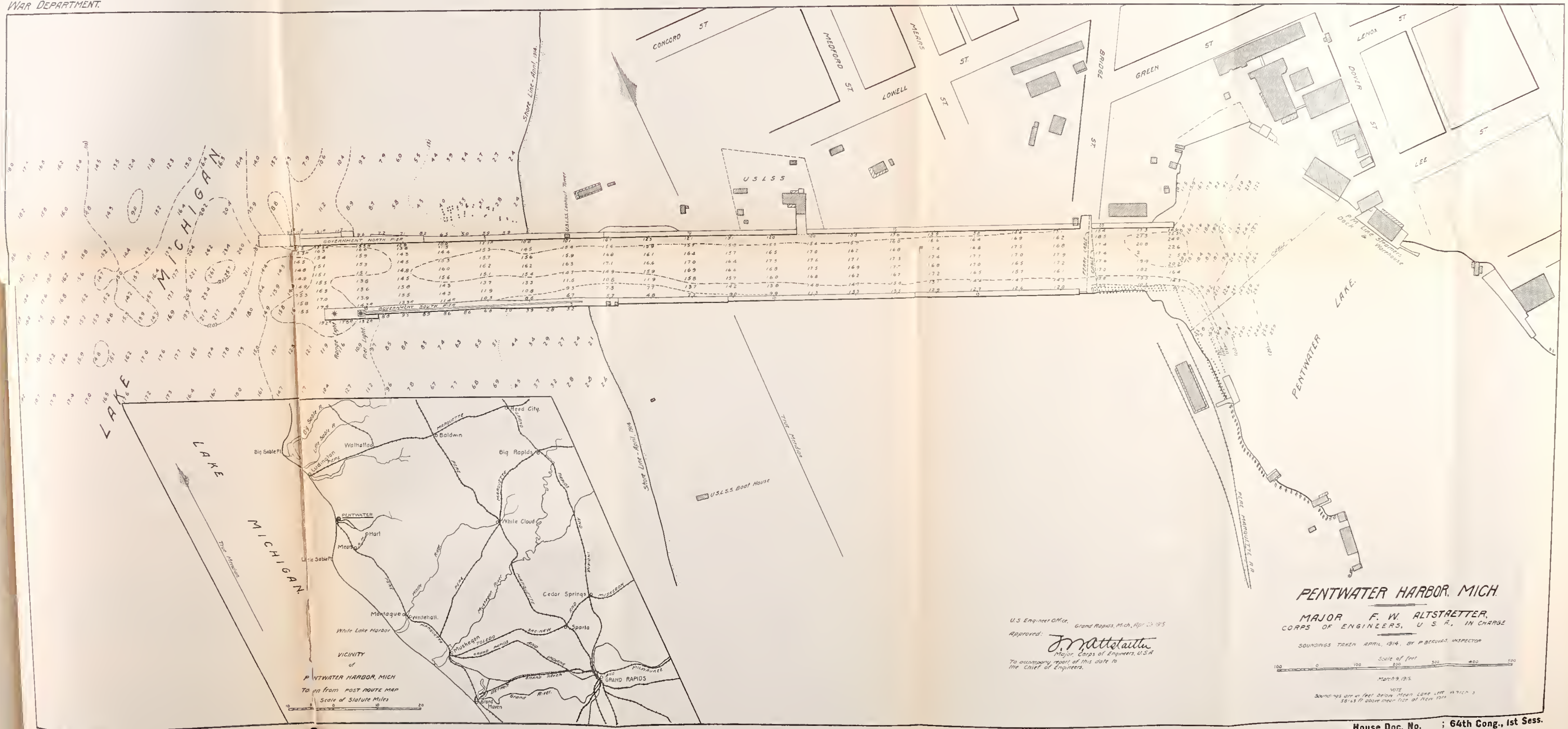
J. G. Warren,
Colonel, Corps of Engineers.

[For report of the Board of Engineers for Rivers and Harbors see p. 2.]

C

WAR DEPARTMENT.

CORPS OF ENGINEERS, U. S. A.



VICINITY
of
P NTWATER HARBOR, MICH
Ta en from POST ROUTE MAP
Scale of Statute Miles
10 5 0 10 20

PENTWATER HARBOR, MICH.

MAJOR F. W. ALTSTAETTER,
CORPS OF ENGINEERS, U. S. A., IN CHARGE

SOUNDINGS TAKEN APRIL, 1914, BY P. BERUIAS, INSPECTOR

Scale of feet
100 0 100 200 300 400 500

March 9, 1915.

NOTE
Soundings are in feet below Mean Lake Level, which is 581.63 ft above mean tide at New York

U.S. Engineer Office,
Grand Rapids, Mich., Apr 23 1915

Approved:
F. W. Altstaetter
Major, Corps of Engineers, U.S.A.

To accompany report of this date to the Chief of Engineers.

House Doc. No. ; 64th Cong., 1st Sess.